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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,750	04/15/2004	Chao -Hsiung Wang	TSMC2003-1412(N1280-00280	7047

54657 7590 05/07/2007

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EXAMINER	
OHIRA, MARISSA A	
ART UNIT	PAPER NUMBER
2851	

MAIL DATE	DELIVERY MODE
05/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/824,750	WANG ET AL.	
	Examiner	Art Unit	
	Marissa A. Ohira	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9 and 25-27* is/are allowed.

6)☒ Claim(s) *1-8,10-24 and 28-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed January 2, 2007 have been fully considered but they are not persuasive.

2. Applicant argues that since the solubility of a compound is dependent on the temperature of the solution in which it is to dissolved, and that reference Zhang does not disclose the temperature of the immersion fluid, there is no indication that the listed alkaline additives would be soluble in the immersion fluid, and produce a pH of greater than 7 in the immersion fluid. However, para. 6 of Zhang states that "there is provided an immersion fluid comprising: from about 10 ppm to the maximum solubility limit of at least one of additives selected." It is clear that in Zhang's invention in adding an additive (a list that includes amines, ammonium salts, and urea, which are alkaline), it is intended for said additive to be soluble in the solution; in which case, the dissolved additive will raise the pH of the fluid to greater than 7. One of ordinary skill in the art would be able to determine the appropriate temperature to ensure the solubility of the selected additive in solution.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent

> granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3, 8, 10-12, 15, 18, 20-22, 29, 31, and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhang et al. (heretofore referred to as "Zhang") (US 2005/0161644).

Regarding claims 1-3, 15, and 28 Zhang discloses:

a) A radiation source providing an electromagnetic radiation with a wavelength of about 193 nm or less (Abstract, lines 6-7);
b) At least one lens (para. 3, lines 1-3) for transmitting a predetermined radiation from the radiation source on a predetermined substrate;
c) A fluid volume in contact with the lens on its first end and with the substrate on its second end (para. 3, lines 1-3),
d) Wherein the fluid volume has a molar concentration of hydroxyl ions between about 10^{-7} mole per liter and about 10^{-1} mole per liter (para. 6; it is known in chemistry that the addition of amines, ammonium salts, and urea raise the pH level of a solution).

Regarding claims 8, 20, and 29, Zhang discloses wherein the fluid volume includes de-ionized water (para. 7, lines 1-5; de-ionized water falls under the category of an aqueous fluid).

Regarding claims 10-12, 21, 22, 31, and 32, Zhang discloses wherein the molar concentration of hydroxyl ions is less than about 10^{-1} mole per liter, between about 10^{-3} mole per liter and about 10^{-5} mole per liter, between about 10^{-5} mole per liter and 10^{-7} mole per liter (para. 6; it is known in chemistry that the addition of amines, ammonium salts, and urea raise the pH level of a solution; the pH will depend on the concentration of the additives, and can be mixed in such a way to produce the desired pH).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 13, 14, 23, 24 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (US 2005/0161644).

Regarding claims 13, 14, 23, 24, and 33, Zhang discloses the claimed invention, but lacks wherein the substrate has a radiation sensitive material and wherein the substrate is a semiconductor substrate material with a photoresist material formed thereon. However, it would have been obvious to one having ordinary skill in the art at the time invention was made to place a radiation sensitive material on the substrate, a form of which may be a semiconductor substrate with a photoresist layer, since one of the

common uses of a lithographic system is the production of the semiconductor devices, which are formed on a semiconductor substrate with a photoresist layer.

7. Claims 4, 5, 16, 17 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (US 2005/0161644).

Regarding claims 4, 5, 16, 17, and 30, Zhang discloses the claimed invention, but lacks wherein the lens has a numerical aperture size between about 0.75 and 0.85, and wherein the lens has a numerical aperture size between about 0.85 and 1.05. It would have been obvious to one having ordinary skill in the art at the time invention was made to chose lens with a numerical aperture size that falls within the ranges cited above, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

8. Claims 6 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (US 2005/0161644) in view of Li et al. (heretofore referred to as "Li") (US 2005/0133688).

Regarding claims 6 and 18, Zhang discloses the claimed invention, but lacks wherein the lens is made of silicon oxide. Li discloses a layer of silicon oxide on a lens (Abstract). It would have been obvious to one having ordinary skill in the art at the time invention

was made to use silicon oxide as a lens material since it increases the effective focal length of the lens (Abstract).

9. Claims 7 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (US 2005/0161644) in view of Pierrat (US 2003/0215616).

Regarding claims 7 and 19, Zhang discloses the claimed invention, but lacks wherein the lens is made of calcium fluoride. Pierrat discloses the use of calcium fluoride as the material of a lens (para. 44, lines 3-6). It would have been obvious to one having ordinary skill in the art at the time invention was made to make a lens out of calcium fluoride since it is a transparent material, therefore minimally absorbs the radiation (para. 44, lines 3-6).

Allowable Subject Matter

10. Claims 9, and 25-27 are allowed. Reasons for allowance are stated in the previous Office Action.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marissa A. Ohira whose telephone number is (571) 272-8898. The examiner can normally be reached on Monday-Friday, 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571) 272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Marissa A. Ohira
Examiner
Art Unit 2851

April 27, 2007

PETER B. KIM
PRIMARY EXAMINER